Earth Science

Rockhounds' NATIONAL Magazine

THE WHITINGS RECEIVE THE WOODRUFF TROPHY AT DENVER
(see page 17)

35¢

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EDITOR'S MEMO PAD

TRENDS!! The trends of the times! What are they? Something which every thinking man must constantly have in mind. How are they to be determined and what is their import? They may be statistical and graphed, or they may be simply the careful observation of any individual who is deeply interested in some particular field of endeavor. The purpose of their study is obvious, and they may lead to the solution of very important and/or decisive questions.

Their employment and use of their implications is as old as history itself—"whither goest thou?", a quotation from scriptures, is a good example of wisdom personified. Trends may be applied to business, economics, politics or the affairs of science, and that is the reason why we as Earth Scientists are interested in this more or less academic subject at this particular time.

By now all of us must be aware that we are well into the start of the International Geophysical Year, which scientists from all over the world will participate in. Their principal concern will be the study of TRENDS, as they relate to such physical factors as may eventually influence the wellbeing of all of Earth's creatures, and of course, including Man himself.

Whether we realize it or not, the first law of nature is the law of change. This is an axiom which must be perfectly plain to everyone who has seriously considered the history of the Earth. That is to say, nothing remains the same, even from one moment to the next, and although, while these changes are constantly going on all about us in one direction or another, they always seem to have an inscrutable way of reversing themselves at the critical moment, thereby keeping nature in more or less perfect balance—otherwise our existence upon the Planet would, indeed, be even more precarious that it now is. The most important changes, perhaps, that are taking place on the Earth immediately affecting Man himself, are changes in climate. These may be short time changes as influenced by the sunspot cycle periodocity, or long range ones due to causes which we at the moment know altogether too little about. They may bring about long periods of severe aridity, or on the other hand great ice ages, which badly disrupt life of the Planet as we now know it.

Most of the studies, it appears, being made during the present IGY, while not always solely so, do in one way or another have some either direct or indirect bearing upon one or more of the many factors responsible for long range (geological) climatic changes upon the Earth. What are the trends of our climatic conditions? Are we at present passing entirely out and beyond the last great ice age, or are we simply living in another interglacial epoch? Will these changes be gradual or slow, or on the other hand, will they be catastrophic or sudden? If sudden, how sudden? This is the question that we would all very much like to know with some degree of certainty. Perhaps in years to come, after the results of the exhaustive studies now being made are analyzed and digested, we will know more concerning the answer, or perhaps we may not. If we are aware of positive trends, something might be done about it, but more likely not.

Voluminous reports concerning these IGY efforts and studies will be appearing in the papers and magazines for years to come and we would advise our readers to follow along with them closely as a positive stimulant to their intellectual growth.

Scientists and others interested in official reports and other publication pertaining to the IGY, may obtain information by addressing the Pergamon Press, London (New York office, 122 East 55th St., New York 22, N. Y.), who are authorized publishers of the "Annals of the International Geophysical Year". These reports published in journal form will record the history, organization, programs and methods of the IGY, and will contain many of the results and catalogues of the data available.

These reports of growing value in years to come are edited under the supervision of Sir Harold Spencer Jones, eminent British scientist, acclaimed authority on things scientific.

*

Distinction. How does a person become distinguished? Many who have outstanding qualifications can lay no claim to distinction, while other more or less ordinary folks become distinguished for some one thing they have done or perhaps on the other hand, for something that they have not done.

To be distinguished one must be both better and different, whether it be in the field of science, politics or industry. Whenever one individual does or accomplishes something worthwhile that no one else has ever done, then, indeed, he is on the road to becoming distinguished.

We have in mind here a man, no doubt known to some of our readers, who has performed a unique feat calling for both perseverance and endurance, which to our knowledge has never before been accomplished by any other single individual. This distinguished gentleman is the Reverend F. W. McDermott, of Springfield, Ill., who has climbed to the highest point in every state in the United States, completing the last two, Gannett peak in northwest Wyoming and Granite peak in Montana this summer.

"Hats off" to the Reverend Mr. McDermott for this most unusual accomplishment, and for those who might like to do likewise we are publishing in next issue of EARTH SCIENCE a list of the "Highest Points of the States of the Union," for the benefit of those who may not even know the location of this point in their own home state.

*

A Friend is Gone. It is with deep regret that we must announce the passing of Kenneth Roberts, noted author and journalist, on July 21, 1957, at his home in Kennebunkport, Me. His contribution, "Henry Gross and His Dowsing

Rod", in our 10th Anniversary issue, of July-August, 1956, was outstanding, and elicited much favorable comment.

*

Working Together. In Bethlehem a child was born. He was called the Christ Child. There were many presents brought to him, including jewelry, cut gems and precious stones. Is it not fitting that this year, we who have lapidary as a hobby should put our talents to work to make jewelry for the underprivileged children for Christmas? (Gleaned from *Current Events*, official bulletin of the Eastern Federation of Mineralogical Societies.)

* * *

LETTERS

*

Lloyd W. Harazim, proprietor of Office Specialties, 2364 N. 58th St., Seattle 3, Wash., informs us he is now ready to take orders for a new book just off the press titled "Midwest Gem Trails," by June Culp Zeitner of Mission, S. Dak.

*

From our friend Gus Brown, an activating force in the Des Moines Lapidary Society, came the following letter which we think has the solution for a problem which confronts many of our societies, not only in the Midwest, but also in other parts of the country as well!

"Here is a problem: Not unusual to clubs in the Midwest. A member said, let's have an overnight rock hunt. Everyone said yes and no one had a suggestion or a location. Sound familiar? What could be done? The Keokuk geodes beds are 150 miles away and all the larger and better known spots are nearing depletion and there is nothing else so far as we now know.

"Here is our solution: We divided up into as many small groups as were possible and practical with at least one guide in each group. We spread out. Each group of one to three cars investigated a specific area of reputed locations. At sundown we assembled at a prearranged headquarters. After freshening up, visiting and chow we held an open meeting and each group reported. We then decided what and how to proceed for the following day, after our community breakfast de luxe ala sunrise.

"Here are the results: Three smaller but good locations were uncovered, at least one new kind of cutting material—as yet unnamed, was found. New types of geodes were discovered. A remarkable achievement for us in Iowa.

"Also, of course, many new members discovered the thrills and excitement of exploration and learned some of the necessary know-how, and this included the rockhound courtesy of the fields.

"No one returned empty handed, and I guess everyone has at least one rock with the 'what-is-it-itis' problem and the 'will it take a polish' problem. All of which means lots of fun in the rockroom and material for one or more social programs in the future.

"Here is our conclusion: There is a big advantage in belonging to a good rockhound club when you are a rockhound. The spirit of let's do things together, the knowledge that comes from the experience, and the demonstration that when friends are all pulling together, the seemingly impossible becomes a simple reality.

"Suppose our club rock hunt had been completely nonproductive of rocks or minerals. The important point is, the attempt to accomplish in itself was fun and in itself was satisfying. This is why in our club we like to say 'Let's be friends—let's help each other.'"

"Gus" represented the Midwest Federation on the program of the American Federation Convention held at Denver in June, where he spoke before a full room on the "Advantages of the V-lock Method" of mounting craftmanship jewelry (See EARTH SCIENCE, September-October, 1956, issue), and his talk was so well received that he was asked to repeat it again on the following day, a thing that has never happened before, to our knowledge. Congratulations, "Gus".

—BEN HUR WILSON, *Editor*

Earth Science

SEPTEMBER-OCTOBER, 1957 Vol. 10, No. 5

Four Glorious Days!

The Second Field Trip Conclave of the Midwest Federation, (17th Annual Convention) was held June 27-30, 1957, at Platteville, Wis., the two Mineral Societies of Madison, Wis., in collaboration with the Wisconsin School of Mines of Platteville, being hosts. The attendance was beyond all expectations, and the entire affair was, indeed, a gratifying success. Everything ran smoothly due to good planning and scheduling, showing the vital interest of all concerned to further the objectives of the Federation.

Friday's field trip, including visits to "Stonefield", Wyalusing State Park, Joe and Betty Phetteplace's Museum at Wauzeka, among other places of interest, was an outstanding event, greatly enjoyed by all. The chartered boat trip Saturday forenoon on the Mississippi out of Dubuque was an educational experience long to be remembered. Other trips were also made to mines and quarries.

Without doubt the lecture following the banquet on Saturday evening, given by Prof. Arthur Vierthaler, of the University of Wisconsin, on the subject of diamonds, including the opportunity of seeing his unique collection of diamonds of various types, diamond crystals and some found in the glacial drift of Wisconsin, was one of the very best talks ever given at a Midwest Convention.

L. to R., PRESIDENT-ELECT HOWARD KNIGHT, MAYOR R. E. BALLIETTE, OF PLATTEVILLE, WIS., RETIRING PRESIDENT MRS. CHARLES E. HEMINGWAY, AND DR. ARTHUR VIERTHALER, OF THE UNIVERSITY OF WISCONSIN.

Delegates in the business session voted to accept the invitation of the Earth Science Society of Northern Illinois, ESCONI, to the Federation's members, to entertain the 1958 Convention at Downers

Grove. This being, perhaps, the largest Earth Science society in the entire country, as well as one of the most active, will assure the Federation of an excellent meeting next year.

Officers elected for the coming year were, Howard Knight, president; Theodore Boente, vice president; Mrs. Bernice Rexin, secretary; Orval Fether, treasurer, and Ben Hur Wilson, historian. Too much credit cannot be given to Mrs. Charles Hemingway, outgoing president, for the success of the Convention over which she most graciously presided—and the fact that she is the first woman to have been elected to the presidency of the Midwest Federation should be a lasting honor. Thank you, Mrs. Hemingway.

—B. H. W.

Tumbling Made Easy

by William J. Bingham

There Seems To Be as many different methods of tumbling stones for baroques as there are tumbling barrels. Most of these procedures are complicated and time consuming and are done by the clock or the calendar instead of by occasional checking on the progress of the process. Below are given some suggestions whereby a person can do a perfect job in the least possible time. These items apply to a hexagonal barrel, 10″ across the flats by 8″ long, made of steel and rubber lines, turning at 20 to 25 R.P.M. and producing the average-size baroques of quartz minerals.

The three steps of coarse grinding, fine grinding and polishing are sufficient.

For coarse grinding use 80 to 100 grit silicon carbide, either loose or as broken up grinding wheels (which work faster than loose grit); quantity, 1 lb. loose grit or 3 lbs. broken grinding wheels per 10 lbs. of stones. Wash out stone dust daily and add fresh abrasive daily and check for sufficient grinding. Do not rely on later steps to do any removal of material. Usually two days are required for water-worn pebbles, and four to five days for broken fragments.

For fine grinding use #600 Silicon Carbide (about ½ lb. to 10 lbs. of stones). Usually two days will be sufficient for this step of the process. Check by trying to polish on a regular polishing wheel. Stones should show a very fine frosty appearance without visible pits. A very good polish should be produced in a 3-second application to a ¼″ square area with a regular polishing wheel. If the polish isn't good add ¼ lb. #600 grit and run another day.

For polishing use ½ lb. tin oxide to 10 lbs. of stones plus some small wood blocks (about ¼ the volume of the charge of stone). They should not be over ¼ the size of the stones in the charge and they can be of any shape and any hard wood. Run until the desired polish is obtained, usually two to four days.

For all steps, fill barrel approximately half full of charge for maximum efficiency. More or less than half full slows down the operation. Water should not quite cover charge. No detergents or additives are necessary or desirable. Whole charges should be approximately of equal hardness. If the charge shows signs of battering or fracturing slow down the tumbler and be sure it is not over half full. Large barrels work faster than small ones, so above must be modified to apply to size other than listed herein.

It Happened at Geode Park!

"Eight Boy scouts, traveling from British Columbia to Valley Forge to attend the annual Jamboree, camped last week in Geode State Park, staying in the open to conserve their limited funds.

"An unidentified Iowa highway patrolman informed State Prison Guard Gus Olson, custodian of 23 prisoners assigned to work in the Park, that the Scouts were nearly out of groceries and were going on short rations.

"Olson talked to the prisoners and they volunteered to miss three meals in order to contribute a supply of staples to the touring Canadian Boy Scouts. They contributed a large supply of groceries including bacon, beans, canned peaches and general staples. The Scouts went on their way thankful to a group of 'hardened' convicts."

—Mt. Pleasant (Ia.) *Daily News*, July 10, 1957.

Prospecting in the Canadian Eastern Arctic

by WILLARD H. PARSONS

II.

WE WERE LOCATED on a very pleasant but bleak lake: we named it Expedition Lake. The opposite shore, less than half a mile away, had steep rocky cliffs with a few remaining snow drifts. The more distant vistas showed rounded hills rising gently perhaps 500 to 700 feet above the lake. But no trees—just bare slopes—rocks largely moss or lichen-covered so that they varied from black through all shades of brown into grey. There is low vegetation—the so-called tundra—and a few green meadows could be seen up the lake. Our lake had a rocky shore and bottom and the water temperature was about 34°. We had been landed on gravelly bench about 4 feet above lake level among many loose boulders and some tundra vegetation. We pitched two tents; one a U. S. Army Arctic-designed pyramid type, which proved to be quite warm even in strong winds. (see accompanying illustration) Two 30 foot aluminum poles were quickly installed for our radio antennae. While we were able, at night, to listen to radio stations all over the U. S. as well as the local short wave stations, our sending strength was so weak that we never made ourselves heard to the nearest radio, some 75 miles away!

We cooked on a Coleman stove and had with us 20 gallons of gasoline! Our menu consisted of such things as dehydrated eggs, milk and cream. We also had canned bacon, dried fruit, cereals and pancake flour for a breakfast variety. For the evening meal we had canned hams, meat balls, hamburgers, stews and dehydrated vegetables. The latter were very successful, especially the potatoes and onions. Fortunately, we got relief from canned food as we soon found fish in our lake: trout up to 6 pounds! It took time and patience to get them as they were rather scarce. They were delicious fried in our canned butter.

When we arrived in late July, the sun set at about 9:30 P. M. but twilight lasted all night. Even at midnight you could still see enough outside to read. Sunsets up the length of the lake to the northwest were very spectacular and lasted through slow changes for a couple of hours. However, by the end of August, sunset time has changed to 7:30 P. M. although the last faint glow of twilight was not entirely gone until 11:00 P. M. This did not hinder sleeping, as our tent was dark-colored.

The weather became a trial and tribulation after the first 10 days. Those first days were fine and sunny with only a couple of rainy days. But then cloudy windy weather became the rule and for our last two weeks a sunny day was a rare thing. The weather was so bad that our return plane was delayed 4 days. We began to think we had been abandoned!

Most rains were gentle drizzles with one exception. That exception was a nightmare, a 24-hour downpour which made our camp site into a near lake. We awoke to find a river flowing right through one tent, both tents leaking, and half our clothes and food already wet through. During this time a strong wind was whipping the tents and almost blew one of them away. We had to pile great boulders all around the edges of both tents. But even a 75-pound rock would roll back and forth as the wind whipped our tent flaps. The temperatures when the weather was cloudy were usually in the low 40's; we had a freeze-up one night. When the sun came out it occasionally warmed up to the low sixties. We wore wool shirts all the time and usually a windbreaker or a parka as well. Even gloves felt good on many days!

Our explorations covered an area of per-25 miles. Walking conditions were good. This country is a region of rolling, bare, rocky ridges with a few cliffs and an average relief of about 500 feet. The highest ridges are perhaps 1000 feet above sea level. On a sunny day, a view from any ridge was a very pleasant sight—mountains as far as the eye could see in every direction with dozens of blue lakes between the ridges. The prevailing color of the country is brown, quite different from the mountain scenery with which most of us are familiar. It all seemed like a landscape from some other planet! From most ridges, we could see a 75-mile stretch of Wager Bay in the distance. On the far south shore we could clearly see the great 2000 foot cliffs we had flown across. On the far western horizon even higher mountains looked very wild and desolate in the haze.

Everywhere the relatively flat-lying ridge tops bristle with scattered angular boulders, from 2 or 3 feet to over 20 feet in diameter. These are, of course, glacial erratics; they cover all the upland terrain and take the place of trees.

Vegetation is quite profuse, though dwarfed. Most of the rocks are covered with lichens: greenish, grey and black in many shades and combinations. Some of the lichens grow 6 inches or more high, and all sorts of mosses grow in a great variety of colors from black through grey and brown in dry places to vivid greens, yellows and reds along stream banks. Many flowers are found in dwarf forms: 3 to 6 inches high. Scrubby willow and birch bushes a foot or two high are common along the streams. Damp meadows are grass covered but not more than knee high. We found dwarf blueberry plants, perhaps 6 inches high, each with a dozen delicious berries.

The Wager Area is the most rocky and mountainous part of the Canadian Arctic west of Hudson Bay, and as a result contains only a few of the barren-land caribou. We saw half a dozen in the whole month. The very irregular character of their antlers gives these animals a fantastic appearance which accentuates the weirdness of the whole landscape so that you almost have to pinch yourself to be sure you are not dreaming. Since caribou are scarce, the wolf, the barren-lands grizzly and the now very rare wolverine are missing. The polar bears stay way down by Wager Bay where there are seals. And since all animals are scarce, there are no Eskimos! We were really alone! We did see many little ground squirrels. These look and act something like prairie dogs and a couple of them became very tame at our camp site, getting much enjoyment from our garbage dump. We also saw an occasional giant Arctic hare, small land birds and a few ducks and loons.

The one abundant form of life is the mosquito!! Millions of them! Everything you've heard about mosquitoes in the Arctic is true and not the least bit exaggerated. Fortunately, we had netting on our tents and plenty of bug dope. We had to eat inside the tents and rub on dope whenever we went out. We found 6-12 to be very effective in keeping the insects from actually alighting: but great clouds of them would buzz around you until the noise was as bad as their bite. We soon learned to pray for wind, for only then were the mosquitoes forced back into their hiding places. We hiked on ridge tops whenever possible for here there was usually enough breeze to at least keep the bugs at bay. But let the breeze die down for an instant and hundreds of the fellows were on you. If your face and hands were doped up, they would sit all over your jacket and hat. We often looked at each other's backs to see them completey covered with mosquitoes trying their best to drill through the heavy jackets. We had to wear jackets or parkas buttoned up tight around the neck even on the few hot days we had. I discovered what Stefannson, the Arctic explorer, meant when he wrote that he was never as hot in the jungle as he was in the Arctic. One must always be completely protected because the hotter it gets the more vicious and numerous the

mosquitoes. I suppose the only thing that saved us from going insane from these hordes was the fact that two days out of three the wind was too strong for them. It was the first time that I ever welcomed a cold gale! We always hiked with wool shirts buttoned up around our necks, caps with ear flaps down and, usually, parkas over the head as well; this kept out either the cold wind or the mosquitoes!

The rock was all granite gneiss, very dull and uninteresting. A few small pegmatite dikes were seen, usually a foot or two wide, but containing only pink feldspar, quartz and a trace of biotite mica. In one spot we found a few specks of pyrite, and some traces of epidote. But even for a non-discriminating collector like myself, there was very little to bring home!

The chief interest in the geology of the region is the record of recent glaciation, the erratic boulders already mentioned and some glacial gravel and sand deposits in a number of places. These include outwash and esker deposits and glacial deltas deposited in a higher level of Wager Bay at the time of the ice. Glacial striae and polish on the smooth ridge tops are very common and show clearly that very little erosion has occurred since the ice melted way. One of the centers for ice accumulation during the great ice age, when ice covered northern U. S., has been located by geologists to the west of Hudson Bay and south of Wager Bay. This was the Keewatin Center. The evidence shows that ice actually moved towards the north—towards the lowland of the Arctic Ocean—across the mountains near Wager Bay! The Canadian Arctic contains thousands of square miles, many of which are almost unexplored, especially for mineral deposits. While the area north of Wager which we examined was disappointing, there must be other areas which do contain many metallic minerals. In fact, we flew over

The author's arctic pyramid tent on the shore of EXPEDITION LAKE. Low, glacially smoothed mountains 4 miles up the lake rise about 700 feet above the lake.

promising areas on our way to Wager Bay, where we could see quartz veins from the air. The Arctic is very favorable for prospecting on two counts: (1) there are great areas where rock is quite well exposed (of course some parts of the Arctic are completely covered with muskeg and tundra but thousands of square miles of bare rock do exist); (2) much of the region is unexplored and has not been overrun by prospectors as have so many other regions, such as the Colorado Plateau by its thousands of uranium hunters. The disadvantages of prospecting in the Arctic are: (1) the difficulties of travel and supply and (2) the costs. If one finds a promising area the cost of developing and ultimately mining will be at least double what it would be in the States or Southern Canada. Thus one must find either a gigantic deposit like the Labrador Iron or a very rich deposit near sea level (Hudson Bay) so that heavy equipment can brought in by water. Prospecting in this area should not be done by the individual or small group but rather by a group that can afford to keep at it for several summers and perhaps equip their geologists with helicopters as the Canadian Geological Survey has done. Then a man can hop from place to place, cross rivers, and sit down and look whenever he wants to. The base camp would be located on an inlet of Hudson Bay so that gasoline and other supplies could be brought in cheaply.

The Minerals of Florida

by HOWARD B. GRAVES, JR.

FLORIDA is not noted for its minerals. No igneous or metamorphic rocks are exposed and there are no mineralized areas. Bedrock consists of recent sands and clays and Tertiary limestones and sandstones. The profuse growth of vegetation which makes the state so beautiful also covers the bedrock and makes collecting difficult. Only in a few limestone quarries and phosphate pits and on the beaches are rocks exposed.

The best known locality is Ballast Point near Tampa. The Tampa limestone is exposed in shallow water on Tampa Bay and silicified coral and chalcedony are washed up on shore during storms. A large number of chalcedony geodes have been found here. The chalcedony is translucent and has a weak greenish fluorescence. Sometimes it is covered with quartz crystals and is quite colorful. A lot of good cutting material has been found here but it is rather difficult to find now.

A limestone quarry at Crystal River has produced a considerable quantity of interesting calcite crystals. The calcite is colorless and fluoresces blue-white.

Fossils in a limestone quarry near Miami have been replaced with amber calcite, which fluoresces various shades of pink, yellow, and green.

Small brownish masses of radiating calcite needles were dredged up from the Gulf at Pine Island, and the calcite fluoresces yellow.

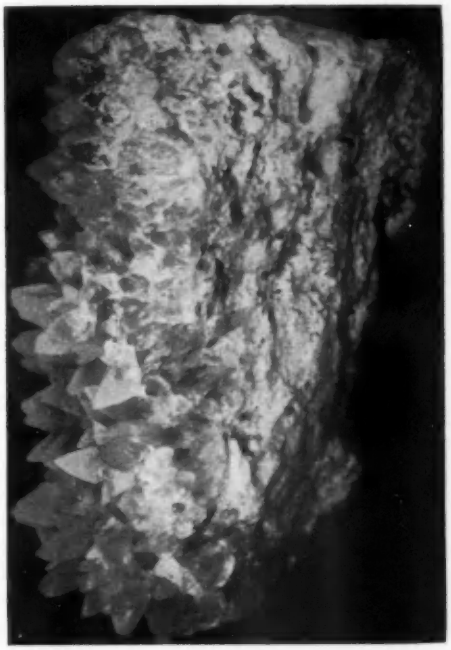
The phosphate mines yield a limited variety of specimens. After mining, drying and grinding the phosphate rock resembles a fine-grained, light yellow sand. It is composed of a mixture of carbonate and fluor apatite but no actual crystals are seen. Pebbles are found that make good specimens, as they are black or bluish and have a shiny surface that looks like it has been varnished. On breaking open these pebbles, the interior is usually found to be dull and light gray in color.

With the phosphate rock many bones of extinct animals have been found. Frag-

ments of bone are found that have been altered to jasper. Some of it is black or brown and could be cut and polished although not outstanding as cutting material.

The most interesting mineral with the phosphate deposits is a brown, translucent chalcedony. It fluoresces yellow under long wave ultra-violet light and a weak green under short wave. It occurs as small flat pieces which represent replacement or filling of mollusk shells. Center columns of gastropods are seen resembling the broken fragments of shells found on the Florida beaches.

Shark teeth and fish teeth are found in several different sizes and shapes. Teeth are usually shiny black with a light gray base.



A fine specimen of golden calcite crystals on oolite, recovered from a large chunk of matrix dreged up from about 30 feet below the water level. This specimen of "dog-tooth spar" *(xl, Var.-Scalenobedroal)* is from the splendid collection of Henry B. Graves, president of the Eastern Federation, of Miami, Fla. Its approximate size is 5"x5"x8", and it is said to be one of the most perfect and best preserved in existence. The photo does not really do it justice, as it was taken from the side so as to show the oolite matrix.

Dredging operation at the pits of the Maule Industries, Inc., located at Miami Springs, Fla. (Courtesy of Mr. A. J. Clapp). Fine specimens of miscellaneous varieties of minerals are frequently recovered from the material brought to the surface by the dredges.

A quarry at Rod Level has concretions of calcite and sand which occur in interesting shapes.

These are among the principal collecting localities of Florida, although there exist other places where occasionally material may be picked up which is considered as being quite worthwhile.

One especially important mineral product of Florida, however, which is not neces-

sarily a collector's item, is in the phosphate deposits of the Bone Valley formation, the leached zone of which contains deposits of uranium oxide, which are of incalculable value to the future of our Atomic Energy Program. Millions of tons of the material, formerly considered as worthless, now dredged up annually near Bartow, Fla., will no doubt now be worked over carefully and concentrated for its valuable uranium content. (See EARTH SCIENCE magazine, July-August, 1955.)

Fossil Diatoms

III.

by BERNARD W. POWELL

HOW TO SECURE FOSSIL DIATOMS

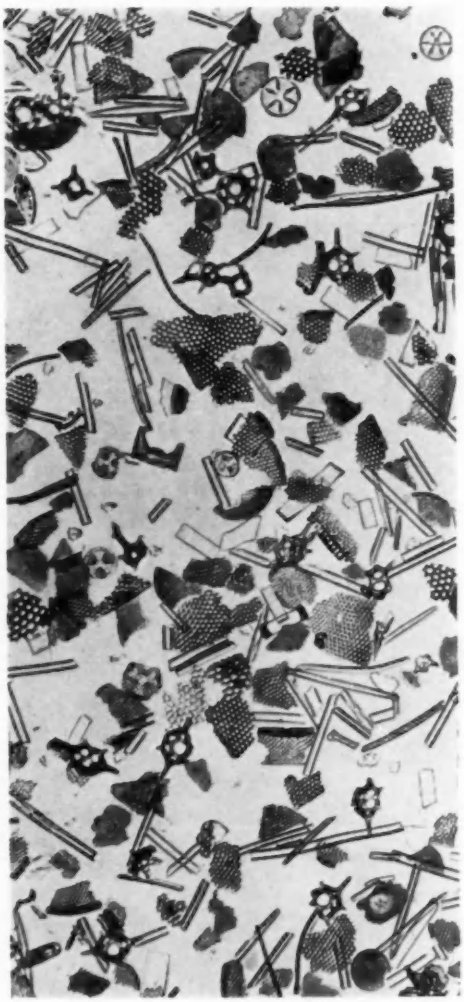
DIATOMACEOUS EARTH may well occur in your vicinity. State universities, and state geological surveys or soil conservation officials can inform you of any local collecting site. If you are not in a fossiliferous region, then at no great cost you may purchase diatomite samples from scientific supply houses. Exchanging with collectors elsewhere is a very good way of adding to one's own collection, as there are specialists in this pursuit throughout the world. Large firms mining diatomite for commercial purposes are often quite obliging at sending diatom earth samples gratis. I refer to such companies as Johns-Manville Corporation (which incidentally works the Lompoc region), and Great Lakes Carbon Corporation. You may find fossil diatoms in a host of products (see previously); once started as a collector you will note new sources for specimens all the time.

HOW TO PREPARE SPECIMENS FOR STUDY AND DISPLAY

If you have lumps of diatomaceous earth, they may be broken with an ice pick, awl, or other pointed instrument. Avoid pulverizing the pieces. A layer of such reduced chunks is spread in a saucepan and covered with a layer of sodium hyposulphite crystals. This is heated over a flame until the crystals melt and the infusorial earth is saturated with melted hypo. Do not add water at any time. The preparation should be allowed to cool for an hour or so, at which time more dry hypo crystals are added and the mass is heated again to insure proper and thorough impregnation of the earth. When allowed to come to room temperature, the absorbed hypo will have recrystallized and the earth will be broken up to its very finest particles by expansion of the forming crystals.

Now fill the saucepan with cold water. You will get a muddy mass that will shortly separate into two components: a bottom sediment, and a floating scum. The sediment will contain the foreign solids and broken diatoms, but in the scum will be your perfect diatom specimens. They are buoyed by air trapped within them. This scum is skimmed from the vessel as long as it continues to form.

The scum should be washed in water to remove all traces of the sodium hypo-sulphite. Then the mass is boiled for about ten minutes in a strong solution of washing soda. Then wash it again in water. Boil again for five minutes in hydrochloric acid (observe all safety measures), wash, boil five minutes in nitric acid, wash, boil five minutes in sulphuric acid, follow with a bleach



Intricacy of fossil diatoms has intrigued microscopists for generations. Preparation of species strew slides, such as this one, will be covered by the author in his text.

in potassium chlorate, and then wash thoroughly.

Your cleaned diatom fossils may now be stored indefinitely in vials of distilled water. Separate vials for each preparation, locality, or site are recommended. You may, if you prefer, proceed with mounting at once. There are numerous methods for preparing diatom slides, and I shall review several:

1) *The Locality Strew Slide* which may be prepared in several ways is one of the easiest for the amateur. First, take a drop of your diatom/water mix from a vial and transfer it to a vial half full of distilled water. Shake this vigorously and examine one drop on a slide under the microscope. There should be enough diatoms present and well enough distributed throughout the field of view so as not to form clumps and masses which overlie and obscure one another. You may tell at a glance whether to add more water or more diatoms to your mix to secure the proper balance.

The few steps necessary in successfully mounting diatoms for microscopic viewing are neither difficult nor impossible for the amateur to perform. A little patience and care will make a good microscopist, and this should be a basic attainment for all students of the earth sciences.

To secure a *balsam mount* (the easiest), breathe on a clean cover glass and immediately add a drop of your diatom suspension. This will spread out evenly in a thin film. Invert a dust cover over the slide while it dries. When absolutely dry, put a drop of balsam in the middle of a clean slide, invert the cover glass over this (diatom side down), and drop gently into the balsam. When the slide is dry, clean it and affix a proper label for identification. Information should include locality or site where collected. An abbreviation such as the following is helpful:

F.F. —Fossil, freshwater
F.B. —Fossil, brackish water
F.M.—Fossil, marine

The dry mount with burned-on cover is a refinement used by many diatomists. As before, a cover glass film is prepared and is placed on a small piece of platinum foil about 1/100" thick and held over the bunsen burner flame until it is heated to a dull red. This assures perfect dryness before sealing the specimens to the slide and also affixes them permanently to the cover—hence "burned-on."

Because the R.I. (refractive index) of balsam is not high enough to resolve the exceedingly fine striations and pores in many diatom "shells," resinous media of higher R.I. are preferred where test slides are being made. Here are some of these materials:

Styrax: widely used; available in two forms: European styrax and American styrax; usually bought dissolved in xylene, benzene or an alcohol. Chloroform is recommended by Johnson as the best of all solvents to use with diatoms.

Hyrax: preferred over styrax but not soluble in

Stratigraphic column above shows how the fossiliferous beds alternated with sterile sediments in formation of the California deposits.

alcohol; R.I. is 1.71 (compare with balsam, for instance, with 1.526); specimens are burned-on (see) and then touched with a drop of xylene to exclude all air from the valves; a drop of hyrax is put on the slide and the cover inverted into it; slide is baked for two days (or till exuded hyrax remains hard); cooling is followed by cleaning of the slide with a cotton swab dipped in benzene; a final 24-hour baking should be followed by a final cleaning with alcohol. *Sirax:* another synthetic resin with high R.I.; has tendency to form troublesome air bubbles. *Piperine:* has R.I. of 1.681; good mountant but apt to crystallize and turn opaque with age; heat-treating again fuses crystals and clears slides without harm to specimens.

There are other mountants but these are not recommended except for those advanced in the techniques of handling poisonous and dangerous compounds. One of these substances is the sulphide of arsenic or *realgar mount*. This has the very desirable R.I. of 2.549 but is extremely poisonous by nature. Those interested in this method are urged to consult the detailed instructions in the original literature on the subject.

2) *The Species Strew Slide* consists of specimens scattered irregularly over the cover glass, but all members are of the same species. In all possible positions, they best present the numerous views for intensive study of any given diatom species. As fossil diatoms rarely occur in nature other than as heterogenous assemblies of mixed species, it is first necessary to separate the various members in your sample. This is done by placing a drop of cleaned locality strew mix on a slide, and then with the aid of a microscope, picking out the different individual species and placing them one by one in proper receptacles—usually a row of labeled vials containing distilled water. Non-microscopic readers may wonder how one can "pick-up" a microscopic specimen and transfer it to a vial. It is a knack, assuredly, but not impossible for the patient student. Diatomists prefer a variety of devices for handling separate diatoms. These include moistened, tapering artists' brushes of badger or camel hair, cat's whisker mounted in a wooden handle, or a mechanical finger. It is said that the old school among diatomists once prided themselves on possession of — and ability to use — a tiger's

COLLECTION FOR WHICH JESSIE AND HOWARD WHITING RECEIVED THE WOODRUFF AWARD

whisker for this purpose. A badger's hair from a shaving brush makes a good implement.

3) *Exhibition Slides* are the culmination of the diatomists' art. Individual diatoms are selected for size and shape to fit into predetermined patterns. Possibilities are infinite and the figures obtained may be likened to those of a child's kaleidoscope. The procedure here is to first decide on the number of diatoms to be shown—standard units being fifty, one hundred, two hundred and so on in multiples of fifty. These are first sketched into a diagram on a layout sheet. This is placed on the table and followed as a mounting guide throughout the preparation of the exhibition slide. A motif must be selected and must be repeated throughout the radiating or intersecting divisions of the slide. Diatoms are marked by symbols on the layout sheet, and are usually placed so that circular species mark termini or intersections, elongate species the radii, triangular species the triadii, and so on.

When this is accomplished, actual preparation of the exhibition slide may be undertaken. The procedure here is to coat the actual space on

(Continued on page 18)

Federation Show at Denver

THE BIG GEM AND MINERAL SHOW held in Denver, Colo., June 13-15, attracted numerous visitors from distant states, including many from the Midwest territory. This was the occasion of the 10th Annual Convention of the American Federation, the Rocky Mountain Federation serving as hosts under the auspices of the Colorado Mineral Society of Denver.

Among the many outstanding exhibits of various classes on display was the mineral collection of Jessie and Howard Whiting, of Rochester, Minn., which was awarded the Harry L. Woodruff Trophy, top award of the show, as being the best of its class on exhibit. (See front cover.)

An excellent program of lectures, field trips and social events was planned for the visitors on this occasion, as it was in Denver that the first convention of the American Federation was held, following its organization at Salt Lake City the preceding year.

Officers for the coming year were elected, as follows: Vincent Morgan, president; Hazen T. Perry, vice president; Henry Graves, second vice president; William E. Sankey, third vice president; James Hurlbut, secretary; Mrs. Helen M. Rice, treasurer, and Ben Hur Wilson, historian.

It was agreed that a historical sketch of the first ten years of the American Federation be prepared and published by the historian, and that the invitation presented by Mr. Sankey for the convention to be held in Dallas, Tex., with the Texas Federation as the official host, be accepted.

The delegates were happy to welcome Mrs. D. H. Rae, of Vancouver, representing the Lapidary and Mineral Societies of British Columbia, and an invitation was extended them to enter and become a part of the American Federation during the coming year.

—B. H. W.

(Continued from page 17)

the slide where the diatoms will be with gum tragacanth. As each specimen is transferred by the whisker from the vials to the slide, breathe lightly on the gum to moisten it. Quick drying that follows soon sets the diatom securely in the gum. Among the most beautiful of all microscope slide mounts, exhibition slides of diatoms give one a real feeling of accomplishment. They make interesting and informative displays and project quite well through low power microprojectors. Though the work is slow and painstaking, it requires only patience and a steady hand and is by no means beyond the power of the average amateur.

Many scientific supply houses sell various types of diatom slides—including the exhibition type—and most persons would find it to their advantage to purchase a few typical slides to see what good examples should be like.

Gypsum at Fort Dodge, Iowa

by C. S. GWYNNE

AT FORT DODGE, Webster County, Iowa, there is a deposit of rock gypsum which in some ways is rather unique. For one thing it is right out in the middle of "nowhere," right under the glacial drift and with nothing to tie it to geologically. It is also unique in that its origin is believed somewhat different from that of most occurences of rock gypsum. It is a valuable deposit, and serves to support a large and thriving industry in gypsum product.

The deposit underlies an area of approximately 30 square miles, averages some 20 feet in thickness, and exhibits crenulated layering, the layers being from one-third to an inch thick. The color is grey, owing to the presence of a small content of clay. This Fort Dodge rock averages about 99.2 gypsum, execeptionally high for the rock variety.

As the early settlers came into the region the gypsum was found outcropping along the sides of the Des Moines River Valley, which follows a course through the area, and for short distances up tributary valleys. Away from these outcrops the gypsum lies beneath an overburden mostly of late Wisconsin drift, almost entirely till, up to 40 feet in thickness. And speaking of this overburden it might be pointed out that the Fort Dodge deposit is within the area of the most recent Wisconsin drift plain, and that therefore the terrain has been but slightly modified by postglacial stream erosion. The Des Moines River lies in a trench 100 feet or so below the plain, and some of its tributaries are incised into the plain for short distances away from their confluence with the river. The major part of the area however is one of slight relief, and it is beneath this that the bulk of the gypsum is found. The overburden over most of the area is therefore of the order of 40 feet. In places it includes a deposit of red shale and crumbly red sandstone, and while these contain no fossils they are believed closely related to the gypsum in age.

The deposit rests unconformably upon beds of the Des Moines series, Pennsylvanian in age, and upon those of late Mississippian, St. Louis or St. Genevieve limestone. In places near the Des Moines River a bed of cherty conglomerate, a foot or so thick, has been found beneath the gypsum. Some of the pebbles contain fossils identified as coming from the Missouri series, stratigraphically above the Des Moines series of southwestern Iowa. The best that can be said as to the age of the conglomerate then is that it is post-Missourian and pre-gypsum. Most of the gypsum however lies upon the Des Moines shale.

At first the rock was quarried from the valley outcrops. Then drift-mines were extended into the valley slopes. Next came shaft mines from the upland, and finally beginning about 30 years ago open-pit or quarry operations were resumed, this time from the upland. In the shaft and drift mines much of the gypsum had to be left for pillars, floor, and roof. In the open-pit operation of today there is less un-

National Gypsum Co. Quarry, Fort Dodge: *left*, Cleared Surface of the Gypsum; *center*, Joint Face, Showing Layering and Solution Depressions; *right*, Old Mine Workings Exposed in Recent Operations

recovered rock. A small thickness may be left as a floor, and also a narrow wall along one side of the working section, beyond which the stripping has been piled in the depleted area.

The upper surface of the gypsum is quite irregular, owing to solution along joints. Some of these solution channels, filled with overburden materials, extend for many feet into the deposits. They thus constitute a problem in underground mining, since if penetrated they leave the mine-roof without solid rock, and liable to collapse. In the open-pit operation the solution depressions must be and are thoroughly cleaned before quarrying. This is on the whole a time-consuming and tedious operation, as much of it must be done by hand, or at least partly with the aid of a small mechanical shovel. A nicely cleared surface of gypsum presents a striking picture of the effect of solution upon the material.

In the operation of the Vincent Clay Products Co. shale pit on the Des Moines River south of Fort Dodge, gypsum pinnacles, blocks, and "hoodoos" were found beneath the drift and above the shale as operations were extended into the side of the valley. This was the case also at the shale pit of the Johnston Clay Works farther up stream on the west side of the river. Here the gypsum fragments and the relics lie beneath terrace gravels which are actively exploited as part of the shale-pit operation. The gypsum of these two operations is recoverable and is marketed.

Most gypsum deposits are explained as deposits, in an arid climate, from isolated bodies of ocean water. Not so with this one. Wilder, in his study of 50 years ago, came to the conclusion that the calcium sulphate was derived from the limestone and shales of the surrounding area. The Pennsylvanian and Mississippian beds of northern Iowa contain calcium sulphate in appreciable amounts. Streams carried this into a lake in which the gypsum was precipitated. Arid climate certainly was involved, and since the Permian is recognized

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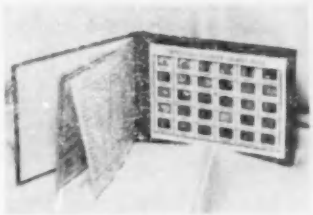

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as a period of aridity the presumption is that the gypsum is Permian in age. Moreover the nearest occurrences of gypsum rock, in Kansas, are of the Permian age. It might be added that in the evaporation of a body of sea water a deposit of limestone is first produced, then gypsum, followed by halite or rock salt. Many gypsum deposits have limestone and rock salt in association, and in some cases there are deposits of potash and magnesium salts as well, derived from evaporation of the last part of the ocean water, the bittern. There is no limestone in close association with the gypsum and there are no salines other than gypsum known in the Fort Dodge area. Admittedly however, salines may at one time have been present and later dissolved away.

Gypsum, as the rockhounds know, is a soft substance, number 2 in Mohs scale of hardness, it is rather light in weight, the rock gypsum having a specific gravity of 2.3 to 2.4. Crystals have three directions of cleavage, and, broken along the one excellent cleavage, the crystalline variety somewhat resembles white or muscovite mica. Like mica it is flexible in thin pieces, but it does not have the elasticity of mica. The color is generally white, and of course the streak is white. It crystallizes in the monoclinic system, and crystals are generally long and slender, with sloping ends. Twins are common. Unfortunately crystals of any size are rather unusual in the Fort Dodge gypsum rock.

The four common varieties of gypsum are selenite, alabaster, satin spar, and rock gypsum. Selenite, the crystal variety, is abundant in some of the shales and clays of the Midwest. Alabaster is a massive variety, quite fine-grained, and often used in ornaments. Satin spar has a fibrous structure, and so has a rather silky sheen. Rock gypsum, the variety most often occurring in large deposits, is massive and in layers. This rock gypsum from Fort Dodge has even been used as a building stone.

Chemically gypsum is calcium sulphate plus two molecules of water. It is somewhat soluble in water, and most gypsum has been formed by precipitation from water solution. Since sulphuric acid is common in nature, produced by the oxidation of pyrite for example, and so also is calcium carbonate, in the form of calcite or limestone, it is easy to see why surface waters almost everywhere might acquire a content of calcium sulphate. Sea water is relatively rich in the compound. About 10 per cent of the saline content of the ocean is calcium sulphate. So it is not surprising that an isolated body of ocean water might yield gypsum upon evaporation, following the precipitation of any less soluble substances.

The gypsum beds of Fort Dodge and vicinity have been the source of much wealth to Fort Dodge and the State of Iowa. In its raw state the material is used as a retarder in Portland cement, so each year great quantities are shipped from Fort Dodge to the cement plants of Mason City and Des Moines. Ten per cent of the gypsum production of the United States goes for that purpose.

In California and some other western states gypsum finds use in conditioning of certain soils. The greatest use at Fort Dodge and elsewhere however is in the manufacture of calcined products. Gypsum has the property of losing three-fourths of its water when heated or calcined to 176°-198° C. The resulting product is known as calcined gypsum, earlier as Plaster of Paris. This, mixed with water, forms a paste which hardens to a rock-like substance. It can thus be used as plaster or cement, or made into sheets or other shapes. From Fort Dodge some of the calcined gypsum is sold as plaster of various kinds, and great quantities are made into building tile, lath and wallboard. The big use is thus in the building industry.

At present there are four companies operating quarries and manufacturing plants in the Fort Dodge area. In 1952, the last year for which figures are available, the production of crude gypsum had a value of $2,800,000.

MOSQUITO RANGE, BORDERING SOUTH PARK, COLORADO

Island Meadows in the Rockies

by RICHARD M. PEARL

THE CHINESE are said to regard the intervals of silence between the playing of music as essential to the performance, making the sounds more melodious and more welcome when heard. The quiet is more than just the absence of music; rather it is a part of the music itself.

To most visitors to Colorado a similarly vivid contrast between the rugged frame of the mountains and the gentle meadow and park landscapes enclosed within it enhances the wonder of the region. Neither aspect would have its full appeal without the other to make the picture complete.

These complementary types of scenery are closely related in their origin. When the Rocky Mountains of the present generation were formed, they were squeezed from the sides to an even greater extent than they were pushed up from beneath. Although the mountains in Colorado are nearly three miles high, the crust of the earth here was shortened fully eight miles as it was thrown into huge folds of rock like solid waves on the surface of the sea.

The crests of these giant waves are now the tops of the mountain ranges, whereas the troughs of the waves have accumulated sediments to become the open spaces we know as parks. Ranges and parks succeed one another across the width of the state, between the low flatness of the Great Plains on the east and the high flatness of the Colorado Plateaus on the west.

In mountain language a park is a wooded level area surrounded by hills. A glance at a map of Colorado shows a series of parks, each of large size, extending diagonally down the center of the state. North Park, Middle Park, and South Park —the names indicate their relative position, cradled between the towering ranges which likewise trend in the same direction, somewhat from northwest to southeast.

South Park, however, is still only half way down the state; in fact, this expansive beauty spot lies in the very geographical center of Colorado. In trying to find additional parks, you would be convinced by even a fairly careful look at the map that the San Luis Valley is the natural southward continuation of this row of open lands. It too is extremely flat and is encompassed by high peaks. But it is actually offset from the main trend of the others, it is younger than the rest, and it differs from them in origin.

Further examination reveals that the next park in line with the three mentioned is really the Wet Mountain Valley. In spite of its name it is not a valley at all, not having been formed by streams, but instead it is a down-folded trough between two rows of mountains, as already explained.

North Park is the least visited of these four natural areas in Colorado. Walled in by the massive peaks of the Medicine Bow Range on the east, the Rabbit Ears Range on the south, and the Park Range on the west, its existence is largely that of Jackson County. The Continental Divide coming from Wyoming turns sharply east at Muddy Pass (the lowest Colorado point on the Divide) and so borders North Park on two sides.

The only town of consequence is the county seat, Walden, a center for fishing, hunting, and ghost-town exploration by visitors, and of ranching by the residents. Near Walden was formerly a unique sight in Colorado, the so-called ice-cream well, gushing forth carbon dioxide gas, from which dry-ice has been made. Flowing through North Park is the North Platte River, one of the very few important streams in the United States that goes northward for any considerable distance.

Middle Park, across the Continental Divide, is criss-crossed by clear streams lined with cottonwoods. Farming, ranching, and

logging are its main activities. Granby is especially noted for its crisp high-altitude lettuce. Hot Sulphur Springs has mineral water baths and holds annual ski tournaments. Joining the Fraser River near Granby, the Colorado River continues through the park, making its exit by way of spectacular Gore Canyon. Between the Gore Range, which is the southward extension of the Park Range, and the Williams Fork Mountains, Middle Park thrusts a narrow tongue of flat land along the valley of the Blue River as far south as the towns of Dillon and Breckenridge.

Magnificent in scope, rich in history, inviting in recreational opportunities, South Park is the most spacious of the four intermountain basins. The striking views which can be seen from Kenosha, Wilkerson, and Trout Creek Passes reveal a surprisingly flat expanse of treeless plain, diversified by low hills and a variety of other minor landforms, all rimmed on three sides by snow-capped peaks which rise majestically above their pine-forested lower slopes. The Park Range (followed by the Continental Divide), the Mosquito Range, and the Tarryall Mountains are the chief encircling boundaries of the park.

Some of the largest trout in Colorado live in the South Platte River and its innumerable tributaries. Lush meadows grow wild hay for winter feed. The bleached remnants of once-busy settlements where placer gold mining was carried on at fever pitch are to be found at Tarryall, Hamilton, and elsewhere in South Park. The largest town in the park is Fairplay, named by a group of prospectors in contempt of the rival camp of Tarryall, which in spite of its name did not welcome them. One of the curious sights in Fairplay is the honored grave of Prunes, a burro long employed in the mines of the surrounding hills.

Lying between the Wet Mountains and the Sangre de Cristo Range, the Wet Mountain Valley continues the chain of interior parks almost to the New Mexico border. Delighting in its moist fertility, in contrast to the parched plains over which they had traveled, early colonists homesteaded here on a cooperative basis. While the valley has become one of the most prosperous agricultural regions in Colorado, its mining towns such as Westcliffe, Rosita, and Silver Cliff are merely shrunken skeletons of their former vigorous selves. Their heated rivalry for prestige and county courthouses has a hollow sound today, but much of that intangible something called atmosphere still remains. It is picked up with every step in abandoned houses, ancient cemeteries, and deserted streets.

Dust To Dust

A pinnacle sat on the canyon's rim,
A hundred million years above the ancient
ocean floor,
And chuckled over some cosmic whim
As he counted the polished pebbles on the
Mesozoic shore.
The scurrying tourists gaped at him
As they sought the coveted skeleton of a
long-dead dinosaur;
And the canyon echoed an answer grim,
When the pinnacle asked, "Oh mortals,
what are you hurrying for?"

—Donnafred Hoff

Midwest Club News

Bernice Rexin, *Club Editor*
3934 North Sherman Blvd.
Milwaukee 16, Wisconsin

Earth Science Club of Northern Illinois on Aug. 31, participated in the annual Fall Festival of Downers Grove with three special shows. Its exhibits included a complete lapidary shop with demonstrations of gem-cutting; a display celebrating the International Geophysical Year; and an "earth calendar" which depicted the geologic periods of the earth's history. Some of the rocks used in the latter display were formed over 500,000,000 years ago. ESCONI will be host to the 1958 convention of the Midwest Federation, and has already started making plans for this important event.

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MINNESOTA MINERAL CLUB traveled 120 miles on July 14 to collect agates at Moose Lake, Minn. The quality and abundance of agates at Moose Lake made the long trip worthwhile. In addition to rock hammers, rakes, etc., the group used portable pressure spray tanks to locate the prettiest agates.

*

EVANSVILLE LAPIDARY SOCIETY recently toured the U. S. Gypsum plant at Shoals, Ind., where it was shown the various steps needed to turn gypsum into wall board. The group was allowed to collect generous samples of the sparkling rock.

*

MICHIGAN GEM & MINERAL SOCIETY recently visited Pugh Quarry at McClure, Ohio, to collect very good specimens of calcite, barite, fluorite, marcasite and dolomite. This quarry is noted for the fine specimens that have been found in it.

*

CENTRAL IOWA MINERAL SOCIETY recently held a group discussion on "Mica." Specimens of mica from Colorado, North Carolina, New Mexico, Africa and India were displayed and compared.

*

MIAMI VALLEY MINERAL AND GEM CLUB on July 20 had fun panning for gold in Salt Creek near Nashville, Ind. Gold found in this region was deposited by the last glacier.

OTHER SOCIETIES

GEMCRAFTERS OF MIAMI, a new society, has completed its first project, a jeweled crown to be awarded the princess who will reign as Queen of Gems at the Eastern Federation Show, Aug. 29-31. The crown is of burnished copper and its eleven points are tipped with faceted gems, including rubies, alexandrite, precious white topaz, amethysts, golden citrine, and a diamond. Its base is encrusted with cabochons. Mountings for the many gems are made of silver. The crown is the cooperative work of 100% of the society's membership.

*

COLORADO MINERAL SOCIETY hosted a very successful American Federation Convention, June 13-16. The convention's lecture program covered all phases of "rockhounding". Sparkling gems, rare fossils, beautiful crystals and black light magic were among the many displays put on by societies and dealers. An activity enjoyed by many visitors was panning for gold!

*

OKLAHOMA MINERAL AND GEM SOCIETY on Aug. 1 heard Harry Smith speak on "Identification of Minerals." Mr. Smith dealt with physical tests for gem identification that did not require special equipment and could be used by any rockhound while out hunting for specimens. Following his talk, Mr. Smith demonstrated these tests by identifying minerals submitted to him for identification by members of OM&GS.

*

ROCKLAND COUNTY GEM & MINERAL SOCIETY has purchased field trip insurance for its members. For one dollar per person the membership is insured for one year for injuries incurred while participating in any field trip sponsored and supervised by RCG&MS, or while traveling directly to or from such activity. The policy pays up to $500.00 of the cost of medical or surgical treatment, ambulance service, hospitalization, or x-rays for any one accident (the first $5.00 of such expense is not covered). Dental expenses, up to $100.00 are paid for injuries to sound, natural teeth. If the injury results in death, loss of limbs, or sight within 90 days after the accident, the policy pays up to $1,000.00 in death or dismemberment benefits.

*

MIAMI MINERAL & GEM SOCIETY recently enjoyed a weekend gathering agatized coral off Ballast Point, Tampa, Fla. Agatized coral occurs in almost every shape and size, from small branch-like pieces to large geodes. The latter, when cut open, usually reveal a beautiful pattern of "bubbles" and sometimes contain clear crystals. The small pieces are excellent for tumbling and cabochon-cutting. It may be red, blue, brown, grey, black, or white. The coral has to be dug out of the muddy bottom of the bay and the best pieces are usually found by those who venture out into the deeper water. For safety and convenience, hunting should be attempted only at low tide.

*

VERDUGO HILLS GEM & MINERAL SOCIETY recently heard Harry B. Derian discuss carving in sapphire and sapphires in general. Mr. Derian carved three of the four "Presidents in Sapphire" for the Kazanjian Brothers. He spent two years carving each sapphire bust.

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